

Bridgton Quadrangle, Maine

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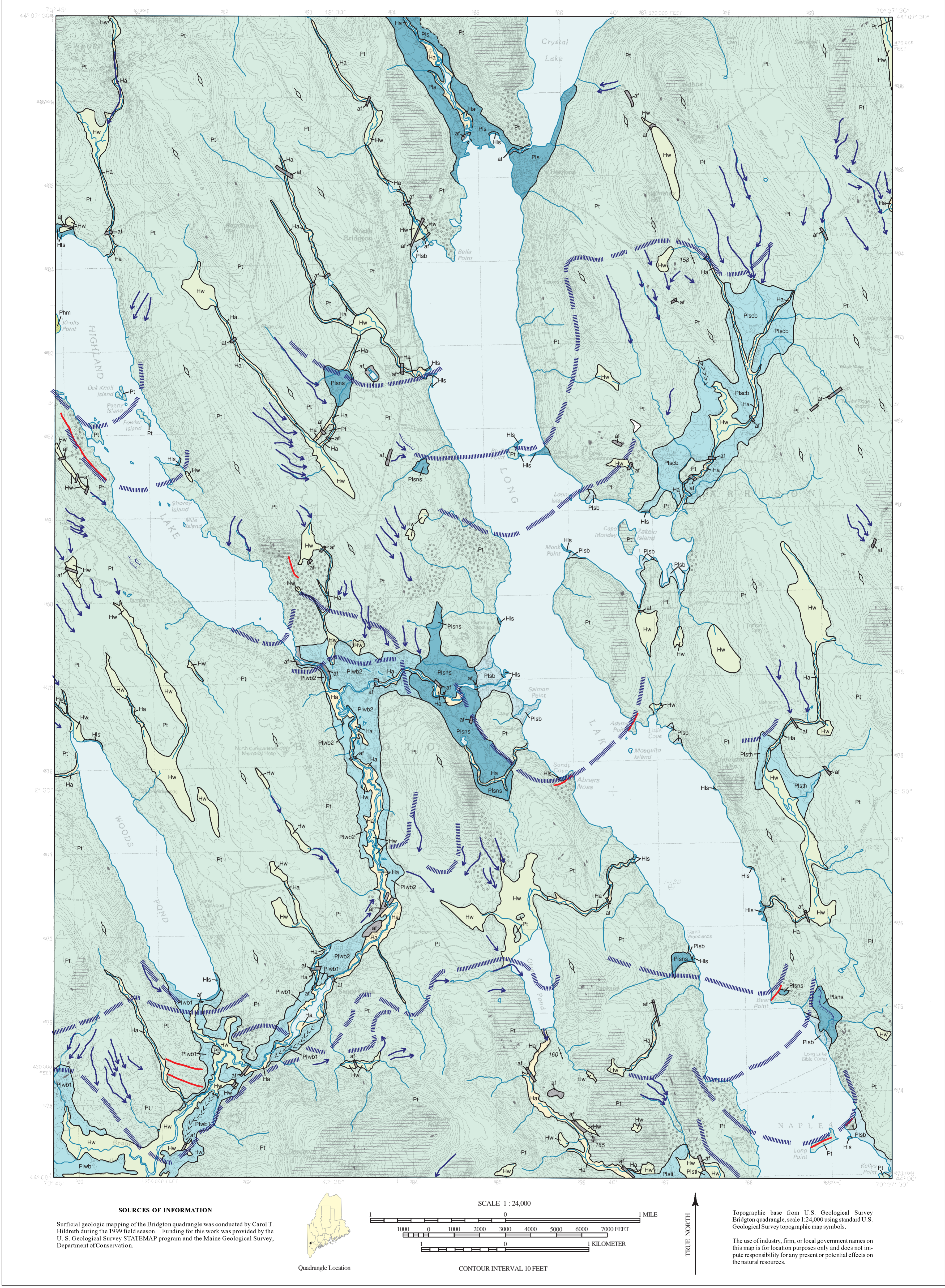
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For additional information,
see Open-File Report 00-139.

Surficial Geology



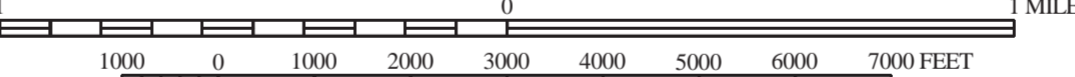
SOURCES OF INFORMATION

Surficial geologic mapping of the Bridgton quadrangle was conducted by Carol T. Hildreth during the 1999 field season. Funding for this work was provided by the U. S. Geological Survey STATEMAP Program and the Maine Geological Survey, Department of Conservation.



Quadrangle Location

SCALE 1 : 24,000



1 MILE
0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 10 FEET



Topographic base from U.S. Geological Survey
Bridgton quadrangle, scale 1:24,000 using standard U.S.
Geological Survey topographic map symbols.

The use of industry, firm, or local government names on
this map is for location purposes only and does not im-
pute responsibility for any present or potential effects on
the natural resources.

NOTE: A very thin, discontinuous layer of windblown sand and silt, generally mixed with underlying glacial deposits by frost action and bioturbation, is present near the ground surface over much of the map area but is not shown.

af **Artificial fill** - Man-made. Material varies from natural sand and gravel to quarry waste to sanitary landfill, includes highway and railroad embankments and dredge spoil areas. This material is mapped only where it can be identified using the topographic contour lines. Minor artificial fill is present in virtually all developed areas of the quadrangle. Thickness of fill varies.

Ha **Stream alluvium** (Holocene) - Sand, silt, gravel, and mud in flood plains along present rivers and streams. As much as 3 m (10 ft) thick. Extent of alluvium indicates most areas flooded in the past that may be subject to future flooding. In places, this unit is indistinguishable from, grades into, or is interbedded with freshwater wetlands deposits (Hw), especially in the Willett* Brook flood plain.

Hw **Freshwater wetland deposit** (Holocene) - Muck, peat, silt, and sand. Generally 0.5 to 3 m (1 to 10 ft) thick. In places, this unit is indistinguishable from, grades into, or is interbedded with stream alluvium (Ha), especially in the Willett* Brook flood plain.

Hls **Modern beach deposit** - Sand and/or gravel with silt in places. Developed along the present and prehistoric shorelines of lakes and ponds. Most extensive and thickest on larger lakes; 0.5 to 2 m (1 to 6 ft) thick. Includes spilt deposits and may include dune deposits.

Pls **Glaciofluvial and glaciolacustrine deposits of the Bear River-Crystal Lake area** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated outwash, bottom, and shore deposits of glacial Lake Sebago. Thickness varies; generally 0.5-21 m (1-69 ft) thick.

Plsns **Glacial Lake Sebago shoreline and nearshore deposits** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated deltaic, ice-contact, fan, beach and nearshore deposits formed in relatively shallow water by wave action reworking older glacial deposits. Some deposits have features characteristic of shallow-water environments. Thickness varies from less than 0.5 m to more than 7 m (1-20 ft).

Plsb **Glacial Lake Sebago bottom deposit** (Pleistocene) - Massive to stratified and cross-stratified sand (generally fine- to medium-grained) and massive to laminated silt and silty clay. Locally may contain boulders, sand, and gravel. Found as a blanket deposit over bedrock and older glacial sediments. Deposited at bottom of glacial Lake Sebago during late-glacial time. Deposits of this unit occupy the lowest elevations in the quadrangle, including deposits under Long Lake. Variable thickness, generally 0.5-9 m (1-30 ft).

Plscb **Glaciofluvial and glaciolacustrine deposits of the Carlsbrook area** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated ice-contact, outwash, bottom, and shore deposits of glacial Lake Sebago. Thickness varies; generally 0.5-3 m (1-10 ft) thick.

Plstb **Glaciofluvial and glaciolacustrine deposits of the Thames Brook area** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated ice-contact, outwash, bottom, and shore deposits of glacial Lake Sebago. Thickness varies; generally 0.5-3 m (1-10 ft) thick.

Plwb2 **Glaciofluvial and glaciolacustrine deposits (second stage) of the Willett* Brook area** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated ice-contact, outwash, bottom, and shore deposits of glacial Lake Willett* Brook. Graded to an outlet at about 125 m (410 ft) elevation near the intersection of Route 117 and 302, whence meltwaters flowed southeast toward Otter Pond and the headwaters of Tingley Brook, the valley of which in the Bridgton quadrangle was carved into a relatively deep gorge by these meltwaters. Thickness varies; generally 0.5-11 m (1-35 ft) thick.

Plwb1 **Glaciofluvial and glaciolacustrine deposits (first stage) of the Willett* Brook area** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated ice-contact, outwash, bottom, and shore deposits of glacial Lake Willett* Brook. Graded first to a divide between the headwaters of the Brook and Perley Pond, between 159 and 165 m (521 and 540 ft) elevation, about 3.2 m (2 mi) south of the quadrangle; later to various cols in this quadrangle in the hills to the east at 152-158 m (500-520 ft) elevation. Thickness varies; generally 0.5-17 m (1-55 ft) thick.

Plstl **Glaciofluvial and glaciolacustrine deposits of the Tingley Brook area** (Pleistocene) - Sand, gravel, silt, and mud. Consists of undifferentiated ice-contact, outwash, bottom, and shore deposits of glacial Lake Sebago. Thickness varies; generally 0-11 m (1-35 ft) thick.

Phm **Hummocky moraine** - Glacial till with hummocky topography. Consists of poorly sorted rock debris deposited by glacial ice. May contain variable proportions of sand and gravel. Locally very bouldery.

Pt **Till** (Pleistocene) - Light- to dark-gray, nonsorted to poorly sorted mixture of clay, silt, sand, pebbles, cobbles, and boulders; a predominantly sandy diamict containing some washed sand and gravel. Thickness varies and generally is less than 6 m (20 ft), but is probably more than 30 m (100 ft) under many drumlins and streamlined hills. Many streamlined hills in this area are bedrock-cored.

* mislabeled as "Willis" Brook on the Bridgton topographic map.

Bedrock exposures. Not all individual outcrops are shown on the map. Gray dots indicate individual outcrops; ruled pattern indicates areas of abundant exposures and areas where surficial deposits are generally less than 3 m (10 ft) thick. Mapped in part from aerial photography, soil surveys (Hedstrom, 1974), and previous geologic maps (Thompson, 1977).

Contact - Boundary between map units. Dashed where very approximate.

Scarp - A relatively steep and straight slope, inferred to be formed by wave action (erosional).

Direction of glacial meltwater or meteoric water flow over outwash or till deposit.

Glacial striation. Point of observation is at dot. Number is azimuth (in degrees) of former ice-flow direction.

Drumlin form or other glacially streamlined hill. Symbol indicates general direction of glacial ice movement.

Crest of esker or ice-channel filling. Shows trend of sand and gravel ridge deposited in meltwater tunnel within or beneath glacier. Chevrons point in inferred direction of former meltwater flow.

Area of many large boulders.

Moraine ridge. Ridge of till and/or waterlaid sediments interpreted to have formed in marginal zone of glacier.

Inferred approximate ice-frontal position at time of deposition of meltwater deposits.

REFERENCES

Hedstrom, G., 1974, Soil survey of Cumberland County, Maine: U.S. Department of Agriculture. Soil Conservation Service Soil Survey, 94 p.

Thompson, W. B., 1977, Reconnaissance surficial geology of the Norway quadrangle: Maine Geological Survey, Open-File Map 77-34, scale 1:62,500.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

- Hildreth, C. T., 2000, Surficial geology of the Bridgton 7.5' quadrangle, Maine: Maine Geological Survey, Open-File Report 00-139.
- Hildreth, C. T., 2000, Surficial materials of the Bridgton quadrangle, Maine: Maine Geological Survey, Open-File Map 00-140.
- Neil, C. D., 1998, Significant sand and gravel aquifers of the Bridgton quadrangle, Maine: Maine Geological Survey, Open-File Map 98-150.
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- Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.
- Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, in Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.